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S2PAD

Software Release Note

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Title : **S2PAD Software Release Note**

Abstract : This is the Release Note for the delivery of the Sentinel-2 Level-2A Prototype Processor Software- Release 2.0.4

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AMENDMENT POLICY

This document shall be amended by releasing a new edition of the document in its entirety. The Amendment Record Sheet below records the history and issue status of this document.

AMENDMENT RECORD SHEET

ISSUE	DATE	DCI No	REASON
	22. May 2015	N/A	First Maintenance Patch, Delivery for Sentinel-2 Level 2A Prototype Processor. Sen2Cor release 2.0.3
	25 Sep 2015	N/A	Urgent fix for correcting the scaling problem on the Level 2A output files. Sen2Cor release 2.0.4

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1. INTRODUCTION

1.1 Purpose and Scope

This document is produced in the context of the development of the Level-2A prototype processor. Its purpose is to detail the delivery of the Sentinel-2 Level-2A Prototype Processor Software, it's Documentation and Environment

1.2 Applicable Documents

The following is a list of documents with a direct bearing on the content of this report. Where referenced in the text, these are identified as RD.n, where 'n' is the number in the list below:

Table 1-1: Applicable Documents

Reference	Code	Tite	Issue
[L2A-SUM]	S2PAD-VEGA-SUM-0001	Sentinel-2 MSI – Level-2A Prototype Processor Installation and User Manual	2.0
[L2A-IODD]	S2PAD-VEGA-IODD-0001	Sentinel-2 MSI – Level 2A Input Output Data Definition	1.0
[L2A-PDD]	S2PAD-VEGA-PDD-0001	Sentinel 2 MSI - Level 2A Product Definition	4.2
[L2A-PFS]	S2PAD-VEGA-TN-PFS-0001	Sentinel-2 MSI – Level 2A Product Format Specification Technical Note	1.4
[L2A-TTSD]	S2PAD-VEGA-TTSD-0001	Sentinel-2 MSI – Level 2A Test Tools Software Documentation	1.1
[L2A-SVVP]	S2PAD-VEGA-SVVP-0001	Sentinel-2 MSI – Level 2A Software Verification and Validation Plan	2.0
[L2A-TR]	S2PAD-VEGA-TR-0001	Sentinel-2 MSI – Level 2A Test Report	1.2
[L2A-DDVP]	S2PAD-VEGA-DDVP-0001	Sentinel-2 MSI – Prototype Processor Design, Development and Verification Plan	1.0
[L2A-ATBD]	S2PAD-VEGA-ATBD-0001	Sentinel-2 MSI – Level 2A Products, Algorithm Theoretical Basis Document	2.0
[L2A-DPM]	S2PAD-VEGA-DPM-0001	Sentinel-2 MSI – Level 2A Detailed Processing Model	2.1

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Reference	Code	Tite	Issue
[L2A-TS]	S2PAD-VEGA-TS-0001	Sentinel-2 MSI – Prototype Processor Technical Specification	2.5
[L2A-TN5]	S2PAD-VEGA-TN-0005	Sentinel-2 MSI – Selection of Algorithms for Level 2A Products Generation	1.2
[PDD]	EOPG-TN-09-0029	GMES Space Component – Sentinel-2 Payload Data Ground Segment (PDGS), Product Definition Document	2.3
[PSD]	S2-PDGS-TAS-DI-PSD	Sentinel-2 Product Specification Documentation	10.0
[L1C-TDS]	SEN2-GSEG-EOPG-TN-13-0002	Sentinel-2 Level-1C Product Test Data Delivery Note	1.0

1.3 Reference Documents

Table 1-2: Reference Documents

Reference	Code	Tite	Issue
[L2A-GLODEF]	S2PAD-VEGA-GLO-0001	S2PAD Project Glossary	3.5

1.4 Acronyms and Abbreviations

All acronyms and abbreviations are listed in [L2A-GLODEF]

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2. SOFTWARE RELEASE OVERVIEW

This is the source code delivery of the Sentinel-2 Level 2A Prototype Processor release 1.0, as delivered as input to the Acceptance Review Milestone [AR].

Release 2.0.4 is an urgent fix covering the problem of the scaling mismatch in the L2A output and consists of three modifications as described in the evolution history, see section 3.1.1. The input parameter <DN_Scale> in the L2A_GIPP has been removed, as the parameter is now read from the L1C metadata on tile level.

2.1 Delivery List

2.1.1 Software

Table 2-1: Software

Item	WP ID	Description	Name	Reference	Revision
SW01	2.1 , 2.4, 2.5	Prototype Processors Software	n/a	n/a	2.0.4

2.1.2 Test Data Sets

N/A

2.1.3 Documentation

N/A

3. STATUS OF THE SOFTWARE CONFIGURATION ITEM

Table 3-1: Listing of software modules

Module	Description
Folder <cfg>:	
L2A_GIPP.xml	GIPP configuration file
Folder <src>:	
L2A_AtmCorr.so	Main modules as described above The source code of module L2A_AtmCorr.so is not part of the standard delivery and will only be handed out to Software Maintainers of the project.
L2A_Config.py	
L2A_Process.py	
L2A_SceneClass.py	
L2A_Tables.py	
Libraries and Utilities:	
L2A_Borg.py	Base class for main modules (see above)
L2A_Library.py	Helper routines as used by the atmospheric correction module
L2A_XmlParser.py	Convenience functions for easy access of xml data structures
Folder <lib>	
./10/h99000_wv29_rura.atm	libRadtran Look up Tables for 10 m resolution, see L2A_IODD for details.
./10/h99000_wv04_rura.atm	
./10/h99000_wv10_rura.atm	
./10/h99000_wv20_rura.atm	
./10/h99000_wv40_rura.atm	
./10/h99000_wv50_rura.atm	
./20_60/h99000_wv29_rura.atm	libRadtran Look up Tables for 20 and 60 m resolution, see L2A_IODD for details.
./20_60/h99000_wv04_rura.atm	
./20_60/h99000_wv10_rura.atm	
./20_60/h99000_wv20_rura.atm	

Module	Description
./20_60/h99000_wv40_rura.atm	
./20_60/h99000_wv50_rura.atm	
./20_60/GlobalSnowMap.tiff	
Folder <templates>	
S2_PDI_Level-1C_Datastrip_Metadata.xsd	XSD scheme files for product format description, see L2A_PFS for details
S2_PDI_Level-1C_Tile_Metadata.xsd	
S2_PDI_Level-2A_DataStrip_Metadata.xsd	
S2_PDI_Level-2A_Tile_Metadata.xsd	
S2_User_Product_Level-1C_Metadata.xsd	
S2_User_Product_Level-2A_Metadata.xsd	
L2A_GIPP.xsd	

3.1 Evolution History

3.1.1 Evolution since version (2.0.3)

The three following issues have been fixed for release 2.0.4:

L2A SPR Ref.	TITLE	COMMENT
SIIMPC-126	Metadata file did not pass validation running Sen2Cor	the warnings concerning the metadata are now redirected in the log files and do no longer occur at the command line irritating the user. The warnings itself result from an evaluation of the L1C metadata against their templates and must be fixed on the L1C metadata level.
SIITBX-113 SIIMPC-189	Sen2Cor has a different scaling on the L2A Output	Scaling of L2A outputs is now equivalent to L1C input and is read from the metadata instead from the L2A_GIPP file.
SIIMPC-189	Size of the L2A preview file does not correspond to L1C	Is now in JP2 format and equivalent in size to the L1C input.

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3.1.2 Evolution since version (1.0.1)

1. The reading and writing of the metadata have been updated in order to support PFS V12.
2. A syntax checker has been implemented which test the compliance of the product metadata before and after processing.
3. The following items have been implemented according to the SPR list provided by TAS: [S2-PDGS-TS-TR-027, issue: 01, date: 19/12/2014]

L2A SPR Ref.	**TITLE**	**COMMENT**
L2A-001	Hosted Processor installation procedure	SUM chapter 3 to be updated with comments in the present report section 2.3 Re: Complete rework of the installation procedure. See chapter 3.
L2A-002	Gdal	Delivery and version compatibility with other user software shall be clarified Re: GDAL will be installed as a conda package under the umbrella of Anaconda. No dependency to any GDAL installation outside of anaconda exists, providing that the PATH variable points to '~/anaconda/bin'. These settings can be placed locally, in order not to interfere with any global python setup.
L2A-003	Anaconda	Clarification on use and installation of the tools to be provided. Re: See chapter 3.
L2A-004	Pythonpath and bashrc	Definition and setting procedure to be described. Launch by shell is mandatory. Re see chapter 3.
L2A-005	User and rights	Procedure related to user (sometimes root) and rights for L1c data to be confirmed Re: no administration rights are required, if a local installation is selected as is advised in chapter 3.
L2A-006	Output directory	Procedure to set output directory (different from input directory) to be enhanced and described. Re has been implemented and can be selected in the L2A_GIPP.xml processor configuration file.
L2A-007	Launch parameters	Procedure to set parameters at launch to be enhanced and described. Ree see section 3.2 Operation.

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L2A-008	Source shell is necessary in order to set environment variable for the L2A processor	This is necessary in order to not modify centre user installation. This shell is updated with predefined variable during the L2A processor installation. See L2A_Bashrc in the sen2cor user directory.
L2A-009	Execution shell is needed to start L2A processor	This shell a source environment shell and launch the real L2A processor (../bin/L2A_Process) This is a special requirement for the PDGS. For this Purpose a Script named L2A_Process.bash has been generated in the sen2cor user directory. For operations under the S2Toolbox this script is not required.
L2A-010	No dependencies must be defined for the L2A installation except for already installed IPF/DPC dependencies	Fortunately, there is no problem with the delivered version because the dependencies are equal to those installed
L2A-011	It is needed to change or comment the ProductionRequestParameters.xsd interface	This is necessary to improve the launch of predefined version, type and options for the correct execution of the L2A processor Re: This information is provided by the L2A_Process.bash script. This does also contain the version number, if multiple versions of the sen2cor should be launched.
L2A-012	Test data rights must be correct	It is necessary to change owner and rights after installation. It is also possible to indicate the command in the L2A SUM. Test data are provided as a zipped tar file. Unpacking is described in the SUM. Installation in the correct environments is in the responsibility of the user.
L2A-013	L2A SUM must indicate how to uninstall the L2A processor if needed (including Anaconda)	See chapter 3.0.
L2A-014	Correct Anaconda version must be delivered with the L2A processor	Delivered Anaconda version is different from the one downloaded on internet and cannot be installed. There are no direct requirements on the anaconda version to be used. It is suggested to install the most recent anaconda release, see section 3.1
L2A-015	Python installation 2.7 is needed but environment variable must be setting whit the 2.6 version	There is no need for any python environment setting, provided that the PATH includes a reference to anaconda/bin
L2A-016	Update of delivery note	Minor corrections to be done in the L2A-RPDN document, regarding the version of L2A-SRN and the FTP server.

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4. ADVICE FOR USE OF THE SOFTWARE CONFIGURATION ITEM

Follow the procedure as described in Section 3.1 of [L2A-SUM] for the installation of the software.

Follow the procedure as described in Section 3.2 of [L2A-SUM] for the configuration of the software.

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5. OPEN ITEMS, LIMITATIONS AND KNOWN PROBLEMS

4. The planned upgrade of the algorithm to continuous data strips is not part of this first processor delivery.
5. The baseline version only foresees one Look up table for rural continental environment. However, if additional LUTs are added, the algorithm must be able to select a LUT based on the ECMWF metadata for ozone, which are provided as reference. The necessary conversion from Kg/m2 to Dobson Unit must then be implemented, which is part of a planned evolutionary upgrade.
6. The algorithm is currently foreseen only for land observations with a restricted usage due to the missing Look up tables for Atmospheric Models of other regions, which are not part of the current baseline.

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